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संपीडक — विशिष्टि
(दूसरा पुनरीक्षण)

Mobile Air Compressor for
Construction Purposes —
Specification
(Second Revision)

ICS 23.140

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FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Compressor, Blowers and Exhausters Sectional Committee had been approved by the Mechanical Engineering Division Council.

This Indian Standard was first published in 1972 and subsequently revised in 1985. This standard is being revised again to keep pace with the latest technological developments and international practices. In this revision, the standard has been brought into the latest style and format of Indian Standards, and references of Indian Standards, wherever applicable have been updated. The following major modifications have been incorporated with revision of the standard:

- a) Amendment no. 1 and 2 have been incorporated;
- b) Clause **6.4** on oil temperature has been modified to include the requirement for high-pressure operation;
- c) Clause **16.1** on instrumentation has been modified; and
- d) Clause **21** regarding BIS certification marking has been added.

The composition of the committee responsible for the formulation of this standard is listed in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard***MOBILE AIR COMPRESSOR FOR CONSTRUCTION
PURPOSES — SPECIFICATION***(Second Revision)***1 SCOPE**

1.1 This standard covers general requirements and performance of internal combustion-engine or electric-motor-driven mobile air compressor plants with positive displacement which include reciprocating, rotary and screw-type compressors for construction purposes with pressure up to 20 bar. The requirements of the standard shall also apply to wheel and skid-mounted plants.

1.2 This standard does not cover the truck-mounted or self-propelled compressors driven by the prime mover of the vehicle itself.

2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed in Annex A.

3 TERMINOLOGY

3.1 For the purpose of this standard, the definitions given in ISO 3857 (Part 2) shall apply.

3.2 Mobile Compressor — A compressor mounted on a trailer which can be towed by a vehicle at speeds and conditions specified in this standard or a skid-mounted compressor which can be lifted along with the skid and bolted onto a trailer which can be towed by a vehicle at speeds and conditions specified in this standard.

NOTE — The definition in 3.2 does not include trolley-mounted small inflating units, which are not covered by this standard.

4 MATERIAL

All materials and components used in the manufacture and construction of the mobile air compressors shall be in accordance with the good engineering practice and as far as possible shall conform to the requirements of relevant Indian Standards.

5 DESIGNATION OF SIZES

The size of the compressor shall be specified by its capacity in terms of free air delivered at the specified working pressure.

6 OPERATING AND STORAGE CONDITIONS

The machine shall be capable of operation and storage in the environment conditions as given in 6.1 to 6.3.

6.1 Temperature

The compressor shall normally be capable of working and being stored without any defect at temperatures 5 °C to 45 °C when the prime mover is an electric motor or an internal combustion engine.

6.1.1 If so required by the purchaser, the compressor shall be capable of working at a temperature other than specified above.

6.2 Humidity

The compressor shall be suitable for operation at 95 percent relative humidity at all temperatures below 27 °C ambient. At and above this temperature the machine shall be suitable for relative humidity, not in excess of that corresponding to 30 mm of mercury.

6.3 Altitude

The machine shall be capable of giving its rated output up to 300 m altitude. If the machine is to run at higher altitudes, the derating factor shall be given by the supplier. If especially required by the purchaser, the engine shall be capable of running at the rated speed and load at higher altitudes up to and including 4 200 m.

7 PERFORMANCE**7.1 Output**

The compressor shall be capable of delivering specified free air flow at rated discharge pressure measured in accordance with IS 5456.

7.2 Air Temperature

The manufacturer shall indicate the rise in temperature (above the intake temperature of the discharged air) measured at the outlet of the compressed air receiver; when the compressor is working at full load under normal working conditions.

7.3 Coolant Temperature

In the case of engine-driven compressor under continuous full load conditions, the temperature of the coolant in the radiator header tank shall be lower

than the boiling point of the coolant by at least 7 °C.

NOTE — The boiling point of water will be higher when a pressurized cap is used.

7.4 Oil Temperature

The temperature of the oil in the compressor and engine shall not exceed 120 °C when the plant is running continuously at full load. The high-pressure operation may call for a high oil temperature operation to avoid condensation. It can be permissible, provided that the manufacturer ensures the oil suitability, equipment reliability, and design of downstream equipment to operate at high temperatures.

7.5 Mobility

The samples of the mobile compressor as defined in 3.2 selected in accordance with 7.5.2 shall pass the type test as described in 7.5.1.

7.5.1 The mobile compressor shall traverse 80 km on a rough cross-country road at a speed of not less than 15 km/h without damage to its any component and without in any way affecting its performance.

NOTE — 80 km run on a rough cross-country road need not be a continuous run.

7.5.2 Unless otherwise agreed to between the purchaser and the supplier, the number of samples for the mobility test may be one in twenty with a minimum of one for consignments of less than twenty and more than five. For consignments of less than five the manufacturer shall give a certificate that the mobile compressor fulfils the requirements of the type test in 7.5.1.

7.6 Operating Angle

The plant shall be capable of operating satisfactorily even when tilted at an angle of one in seven in any direction.

8 AIR COMPRESSOR

The air compressors shall meet the requirements as given in 8.1 or 8.2.

8.1 Oil Flooded Rotary Vane and Screw Types

The compressor shall be of one or two stages and shall conform to the requirements as given in 8.1.1 to 8.1.4.

8.1.1 Oil System

The compressor oil system shall be self-priming and shall incorporate an element-type filter, easily accessible and with a minimum life of 100 h. The system shall be so arranged that oil shall automatically bypass the filter in the event of a restriction. An oil contents gauge or dip-stick shall be supplied and there shall be a means of adequately draining the system.

8.1.2 Air Output Control

This shall be done by engine speed control and suction unloading; for electric motor run compressors, it shall be with suction unloading only. The engine speed shall be within the limits recommended by the engine manufacturers. The air output control shall give a maximum pressure differential of 1 kg/cm² between full output and no flow, this pressure being measured at the inlet to the receiver connection. The control shall be adjustable to give the rated capacity at any discharge pressure up to 1.5 kg/cm² below the rated pressure of the compressor. All moisture filters in the air system shall be rustproof and easily accessible.

8.1.3 Discharge Pressure Control

For the proper functioning of the compressor, the necessary device shall be fitted to maintain adequate air pressure in any receiver even if air cocks are fully open.

8.1.4 Automatic Shut-down Devices

Automatic shut-down devices shall be fitted, if required by the purchaser.

8.2 Reciprocating Type

The reciprocating type compressor shall conform to the requirements given in 8.2.1 to 8.2.3.

8.2.1 Lubricating System

The compressor shall have a suitable lubrication system to give adequate lubrication under all starting and climatic conditions. The lubricating system shall incorporate an oil filter easily accessible. If so required by the purchaser, the system shall be so arranged that oil shall automatically bypass the filter and the oil cooler (if fitted), in the event of a restriction in either of these components. Means shall be provided for isolating the oil cooler (if fitted), alternatively, an automatic shut-down device shall be provided. Easily accessible drain points shall be provided for draining all lubricants. An oil contents gauge or dipstick shall be provided for measuring the level of the oil in the crankcase.

8.2.2 The compressor shall be fitted with an automatic device to maintain the pressure in the air receiver between the limits of rated pressure. If required by the purchaser, an automatic pressure-operated control shall be incorporated to reduce the engine speed and unload the compressor.

8.2.3 Water Cooling System

In the case of water-cooled machines, the cooling system may be combined with that of the engine. If a separate cooling system is used it shall conform to the requirements as given in 8.2.3.1 to 8.2.3.4.

8.2.3.1 The system shall be so arranged that when the plant is shut down, water circulation shall be maintained by thermosyphone.

8.2.3.2 In the case of internal combustion engine-driven compressors, it is recommended that a thermostat bypass valve is incorporated into the system.

8.2.3.3 The radiator may, at the request of the user, be fitted with adjustable doors or shutters, whereby the operating temperature of the engine may be maintained at a satisfactory figure when the plant is running at temperatures down to - 13 °C.

8.2.3.4 Easily accessible drain points (either drain cocks or drain plugs) shall be provided in order to drain the system completely without tilting or dismantling the plant. Drain-cocks shall be closed when the handles are in the down position.

9 AIR RECEIVER

The requirements of the air receiver shall be as agreed to between the purchaser and the manufacturer.

10 PRIME MOVER

10.1 The prime mover shall be either an electric motor conforming to relevant Indian Standards or an internal combustion engine conforming to IS 10001 or IS 10002 or a variable speed compression ignition (diesel) engine as agreed to between the manufacturer and the purchaser. The prime mover shall meet the power demand of the compressor under conditions as specified in 6. Provision shall be made to measure the speed by the tachometer.

10.2 The compressor unit shall be provided with the following:

- a) Running hour recorder, when so required by the purchaser;
- b) Revolution meter, when so required by the user;
- c) Exhaust to be so arranged as to avoid contamination of air inspired by the compressor and the engine; and
- d) A cold starting device shall be supplied with the prime mover when the compressor is to operate at a temperature sub-zero and/or as per the engine OEM's recommendation.

10.2.1 The engine exhaust silencer, is so designed and fitted that the noise level should be limited to 75 dB at 7 m distance as per ISO 2151 and ISO 3744.

10.2.2 ISO 2151 shall be followed for the measurement of the noise level of the compressor unit.

10.3 Starting System

The internal combustion engine shall be provided

with an electric or hydraulic or spring starting gear. The electric starter when provided shall be on a 12 V/24 V electric system. Hand starting arrangement may be provided as an alternative to electric or hydraulic or spring starting gear for engines up to 22.5 kW.

10.4 In the case of an electric motor being the prime mover, the following shall be provided:

- a) Starter with overload relay trip and no volt coil;
- b) Voltmeter (optional);
- c) Ammeter (optional);
- d) Running hour recorder, when so required by the purchaser;
- e) Tachometer (optional); and
- f) Suppression of radio interference (optional).

11 MOUNTING

11.1 The compressor, prime mover, and air receiver shall be mounted either on a trailer of sound design or a skid capable of being fitted on a trailer (*see 3.2*). The compressor and prime-mover shall also be mounted on a tubular frame forming an air receiver of sound design and capable of taking the entire load.

11.2 Trailer Mounting

The trailer shall have pneumatic or solid rubber wheels with 1 or 2 axles as agreed to between the user and the manufacturer. When the compressor is mounted on a trailer, the following shall be ensured.

11.2.1 Centre of Gravity

The fully laden plant shall not overturn on its near or off side when mounted on a tilting platform, tilted laterally to an angle of 15°.

If so agreed to between the purchaser and the supplier, as a special requirement the fully-laden plant shall not overturn onto its near or off side when mounted on a tilting platform, tilted laterally to an angle of 30°.

NOTES

1 The requirements in **11.2.1** shall not necessarily mean that the plant shall be capable of operating under the conditions mentioned in **11.2.1**. The plant shall be capable of operating satisfactorily at an angle as indicated in **7.6**.

2 The requirements in **11.2.1** shall not be considered as a 'routine test'. Normally the manufacturer's certificate guaranteeing the performance in accordance with **11.2.1** shall suffice, but where specifically required by the purchaser a type test may be done in accordance with **7.5.2**.

11.2.2 Lashings and Lifting Eyes

The chassis shall be fitted with the lashing eyes. When so required by the purchaser, adequate facilities shall be provided for lifting the complete equipment.

11.2.3 *Mudguards*

Mudguards shall be fitted to all road wheels and shall have a minimum clearance of 25 mm on the tyres when the suspension is fully deflected and each axle is fully articulated about the longitudinal axis of the chassis, alternatively, any other equally suitable arrangement may be provided.

11.2.4 *Tyre Inflation*

Arrangements for inflating the trailer tyres from the compressor reservoir be provided, if so required by the purchaser.

11.2.5 *Resting Bars*

In the case of a two-wheel trailer, two adjustable resting bars or fixed resting supports shall be provided on the rear end of the trailer. A landing leg or wheel shall be provided below the drawbar of the trailer to hold the trailer chassis when uncoupled from the towing vehicle.

11.2.6 *Brakes, Lights Reflector, and other Safety Requirements*

The trailer shall have brakes, lights reflector, and other road safety devices as per the relevant statutory regulations. A parking brake shall be provided to keep the compressor in position when stationary at a slope of 1 in 7.

11.3 *Skid-Mounting*

In the case of skid-mounting compressors, the mounting of the whole unit shall be such that it shall be lifted conveniently by a crane and readily fixed in a position on a trailer designed for the same. Holes shall be provided in the skid base to allow bolting down in a foundation. The machine mounted on the skid shall be capable of operating normally if the skid is placed on a trailer and bolted down. The following shall be ensured.

11.3.1 In the case of two-wheeled trailers the skid-mounted prime mover compressor unit shall be so located on the trailer that the preponderance of weight on the drawing bar eye when the trailer frame is in level, shall be between 25 kg and 35 kg.

11.3.2 The skids shall fit between the wheel arches, where exist, and shall not exceed the length of the appropriate trailer platform.

11.3.3 The prime mover and compressor unit shall be capable of operating both when mounted on the trailer and when dismantled from the trailer without any necessity for bolting down to a foundation. In the latter case, the compressor shall operate satisfactorily with no site preparation other than rough levelling of the ground by hand.

11.3.4 The complete skid-mounted compressor unit shall be fitted with a bale or lifting ring or rings to enable the equipment to be lifted by a crane. The lifting ring or rings shall be strong enough to enable the whole assembly including the appropriate trailer, fuel, oil and maintenance tools to be lifted from the ground with safety. The lifting gear, including the rings, shall be capable of withstanding any handling conditions which may be encountered, such as the rapid lowering and sudden stoppage of the load.

11.3.5 The design of the skid base and the mounting of the engine and compressor upon it shall be such that distortion of the trailer frame as in cross-country running shall not be transmitted to the engine and compressor assembly.

12 AIR CLEANERS (FILTERS)

The air cleaners (filters) fitted to the engine and air compressor shall be subject to an agreement between the purchaser and the supplier.

13 FUEL SYSTEM

13.1 The fuel tank shall be of sufficient capacity to provide a minimum of six-hour running on full load. The filling orifice shall incorporate a removable filter and shall be of adequate size. A captive filler cap shall be provided for the filling orifice and the method used for venting the tank to the atmosphere shall be such that no fuel spillage occurs when the machine is travelling with the tank completely full. The draw-off from the fuel tank to the engine shall leave sufficient dead volume below it at any operating angle up to 10 degrees. A plug shall be provided for completely draining the tank. A dipstick shall be provided for measuring the fuel. A fuel gauge, indicating refill level and the maximum level, shall be fitted in the tank on the base panel as agreed to between the manufacturer and the purchaser.

13.1.1 If specified, a hand-operated semi-rotary pump shall be fitted to the plant in a position suitable for pumping fuel from containers on the ground to the fuel tank. The pump shall be complete with hose and suction and strainer which shall be of such diameter as to admit entry to the 50 mm opening in 180 litres drum. The suction hose and strainer shall be secured in such a position as to keep it dry and free from road dirt. Fuel filters of adequate capacity for the conditions specified in 6 shall be incorporated into the system.

14 TAKE-OFF COCKS

14.1 Unless otherwise required by the purchaser, take-off cocks of 20 mm size as per IS 3004 shall be provided. They shall be positioned on a discharge

manifold within the overall dimensions of the chassis mounting:

<i>Sl No.</i>	<i>Inlet Volume (m³/min)</i>	<i>No. of Cocks</i>
(1)	(2)	(3)
i)	1.85	2
ii)	3.40	2/3
iii)	4.25	2/3
iv)	5.95	3/4
v)	8.92	3/4

In addition, means shall be provided for taking the full output of the compressor through the one take-off point.

14.2 The cocks shall be 'straight through', inverted, spring-loaded, taper plug type or wheel valve type. They shall be suitable for connection to the standard female hose union. Each cock shall be provided with a non-ferrous captive protecting cap which screws on the full length of the thread, and which is firmly secured by a suitable length of non-ferrous or galvanized chain sufficiently strong to withstand rough handling.

14.2.1 If agreed to between the purchaser and the supplier, wheel valves may be provided as an alternative to the cocks in **14.2**.

15 CANOPY AND GUARDS

To give protection against weather, the plant shall be provided with a metal or fibreglass canopy having detachable or folding side screens. Locking devices shall be fitted on the canopy and all equipment and tools shall be either accommodated within the enclosed space of arrangement at a suitable position outside the canopy (*see 18*). Suitable guards for the moving parts shall be fitted as necessary to give mechanical protection to the plant and physical protection to the operating personnel.

16 INSTRUMENTATION

16.1 The following instruments shall be incorporated:

- Pressure gauges for air receiver, the first stage of air compressor (if two stages) and engine oil pressure switch/transmitter (for engine-driven machines only);
- Capillary dial-type thermometers of dial size not less than 50 mm for recording the temperature in the radiator header or temperature switch/transmitter;
- Capillary dial-type thermometers of dial size not less than 50 mm for recording the temperatures of the compressed air or oil

delivery (rotary machines only) or temperature switch/transmitter;

- Tachometer (optional);
- Voltmeter with a rotary switch (for motor-driven machines only) (optional); and
- Thermometers shall be marked with the normal operating temperature range (optional).

16.2 All instruments shall be conveniently grouped on an instrument panel. If required by the purchaser a switch and panel type lamp operating from the starting batteries shall be fitted to illuminate the instrument panel, alternatively, inspection lamp shall be provided.

16.3 The engine starting controls shall be either mounted on the instrument panel or located sufficiently close to it to permit the operator to read the instruments when starting the engine.

16.4 All instruments shall be suitably identified to indicate their function.

16.5 All pressure gauges shall be of automotive type.

17 TOOLBOX

A toolbox, with means for locking the lid, shall be provided and firmly secured in a suitable position inside or outside the canopy (*see 15*).

18 TOOLS

To enable the purchaser to decide what tools (spanners) shall be supplied with the plant, full particulars of the tools normally supplied for operation and maintenance shall be given at the time of tendering.

19 DISMANTABILITY

19.1 During design, consideration may be kept for a purchaser's requirement who wants the plant to be made dismantlable into convenient independent small loads, as mutually agreed upon by the purchaser and the manufacturer, for transportation in inaccessible areas.

19.1.1 The plant shall be capable of being dismantled easily in a short time by ordinary hand tools and shall not require any special tools or equipment for that purpose.

19.2 TEST ON COMPRESSORS

For acceptance, the compressors shall be tested in accordance with IS/ISO 1217 or IS 5456 and methods of tests agreed to between the purchaser and the manufacturer, as applicable.

20 DOCUMENTS

20.1 A copy of the operating and maintenance manual illustrated parts list shall be provided along with each unit.

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20.1.1 If required by the purchaser, the workshop manual shall specify the working limits for the dimensions of all-important moving or wearing parts of the compressor, beyond which the parts shall be replaced.

21 MARKING

21.1.1 An approved information plate or plates, permanently and clearly marked with the following information, shall be fitted to each plant:

- a) Maker's name, type and serial number;

- b) Rated output; and
- c) Rated pressure.

21.1.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

ANNEX A
(Clause 2)

LIST OF REFERRED STANDARDS

<i>IS/ISO No.</i>	<i>Title</i>	<i>IS/ISO No.</i>	<i>Title</i>
IS/ISO 1217 : 2009	Displacement compressors — Acceptance test	IS/ISO 3857 (Part 2) : 1977	Compressors, pneumatic tools, and machines — Vocabulary: Compressors
ISO 2151 : 2004	Acoustics — Noise test code for compressors and vacuum pumps — Engineering method (Grade 2)	IS 5456 : 2006	Testing of positive displacement type air compressors and exhausters — Code of practice (<i>second revision</i>)
IS 3004 : 1979	Specification for plug cocks for water supply purposes (<i>first revision</i>)	IS 10001 : 1981	Performance requirements for constant speed compression ignition (diesel) engines for general purposes (up to 20 kW)
ISO 3744 : 2010	Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for an essentially free field over a reflecting plane	IS 10002 : 1981	Specification for performance requirements for constant speed compression ignition (diesel) engines for general purposes (above 20 kW)

ANNEX B
(Foreword)

COMMITTEE COMPOSITION

Compressor, Blowers and Exhausters Sectional Committee, MED 22

<i>Organization</i>	<i>Representative(s)</i>
Bharat Petroleum Corporation Limited, Mumbai	SHRI K. RAVI (<i>Chairperson</i>)
Atlas Copco India Limited, Pune	SHRI VIJAY SHARMA
Automotive Research Association of India, Pune	SHRI PRASAD YADAV SHRI ATUL GAIKWAD (<i>Alternate</i>)
Bharat Heavy Electrical Limited, New Delhi	SHRI S. DURAIRAJ SHRI Y. V. RAMA LAKSHMI (<i>Alternate</i>)
Bharat Petroleum Corporation Limited, Mumbai	SHRI KANNAN V. V.
Boldrocchi Indian Private Limited, Gurugram	SHRI NOKESH AGGARWAL SHRI PIYUSH GOEL (<i>Alternate</i>)
Burckhardt Compression India Private Limited, Noida	SHRI R. S. GUNAJI SHRI A. BHASKAR PRABHUNE (<i>Alternate</i>)
CSIR - National Physical Laboratory, New Delhi	DR RAJESH KUMAR PROF DR M. SINGH (<i>Alternate</i>)
CSIR - National Aerospace Laboratories, Bengaluru	SHRI THENNAVARAJAN S.
Directorate General of Quality Assurance, Ministry of Defense, New Delhi	LT COL DEEPAK SHARMA SHRI U. R. RAJA (<i>Alternate</i>)
Dresser-Rand India Private Limited, Pune	SHRI M. H. VYAS SHRI J. B. RAVAL (<i>Alternate</i>)
ELGI Equipments Limited, Coimbatore	SHRI JAYARAJ B. SHRI S. SENTHIL KUMAR (<i>Alternate</i>)
Engineers India Limited, Gurugram	SHRI J. S. DUGGAL SHRI MAHESH EASWARAN (<i>Alternate</i>)
GAIL (India) Limited, New Delhi	SHRI SATISH GEDA
Hindustan Petroleum Corporation Limited, Mumbai	SHRI V. V. RAJSEKHAR SHRI MUNESH KUMAR (<i>Alternate</i>)
Indian Oil Corporation Limited, New Delhi	SHRI GAUTAM MISRA
Indian Register of Shipping, Mumbai	SHRI SUNEET DIGIKAR SHRI KARTHIK S. (<i>Alternate</i>)
Ingersoll Rand India Limited, Ahmedabad	SHRI RAMESH K. V. SHRI DILEEP PATIL (<i>Alternate</i>)
Kirloskar Pneumatic Company Limited, Pune	SHRI PRAMOD KUMAR YADAV SHRI AMIT SAXENA (<i>Alternate</i>)

<i>Organization</i>	<i>Representative(s)</i>
MECON Limited, Ranchi	SHRI SUJOY BANERJEE SHRI A. K. MODI (<i>Alternate</i>)
NTPC Limited, New Delhi	SHRI ANUJ KUMAR SHAHI SHRI DOONDESHWAR V (<i>Alternate</i>)
National Fertilizers Limited, Noida	SHRI M. N. GOYAL SHRI RAJEEV KUMAR AGARWAL (<i>Alternate</i>)
Neuman and Esser Compressor Application Centre Private Limited, Pune	SHRI ATUL AGARWAL SHRI MAHESH DIXIT (<i>Alternate</i>)
Oil and Natural Gas Corporation Limited, New Delhi	SHRI BRAJ KISHOR RAI SHRI RITUJIT HAZARIKA (<i>Alternate</i>)
Project and Development India Limited, Noida	SHRI S. MANDILWAR SHRI AJAY K.S. RUHEL (<i>Alternate</i>)
Reliance Industries Limited, Mumbai	SHRI S. K. GARYALI SHRI RANJIT S. MUNDRA (<i>Alternate</i>)
Research Designs and Standards Organization (RDSO), Lucknow	SHRI SATNAM SINGH SHRI VIJAY KUMAR GOEL (<i>Alternate</i>)
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Member Secretary
SHRI LOKRAJ MEENA
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Bureau of Indian Standards

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website- www.bis.gov.in or www.standardsbis.in.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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